

Supplementary table 1

Amino acid sequences of human glucagon and glucagon antagonist.

	1	5	10	15	20	25	29																						
Human	H	S	Q	G	T	F	T	S	D	Y	S	K	Y	L	D	S	R	R	A	Q	D	F	V	Q	W	L	M	N	T
Antagonist		S	Q	G	T	F	T	S	Nle	Y	A	K	Y	L	D	A	R	R	A	Q	D	F	V	Q	W	L	M	N	T

Supplementary table 2

Primer sequences and real-time PCR conditions used in this study.

Gene Target/Accession No. (Primer Sequences, 5'-3')	PCR Condition				Cycle	<i>T_m</i>	Product size
	Denaturing	Annealing	Extension	Detection			
<i>leptin-AI/ FJ534535</i> TCCAAAGCTCCTCATAGG TGGTGGGTGGCGTTTTCC	94 °C 30 s	50 °C 30 s	72 °C 30 s	86 °C 20 s	45	89 °C	270 bp
<i>leptin-AII/ FJ854572</i> TATCGTGGACACCCTAAGTAC GGCTAAAGCCAAGAACCCTAA	94 °C 30 s	50 °C 30 s	72 °C 30 s	85 °C 20 s	45	89 °C	224 bp
<i>leptin receptor/ HQ993048</i> CATCTGTGAGGTGAAAATC GAGTTGTTGGCAGAGA	94 °C 30 s	54 °C 30 s	72 °C 30 s	87 °C 20 s	45	90 °C	300 bp
<i>preproinsulin/ KT071542</i> GCCCTCTACCTGGTCTGTG AAGTCATTGGCGTTGTC	94 °C 30 s	54 °C 30 s	72 °C 30 s	86 °C 20 s	45	89 °C	252 bp
<i>IGF-II/ AF001006</i> TTTTATTTACAGCAAACCGACAG CCTCCTACAGGAAGAGTGCC	94 °C 30 s	55 °C 30 s	72 °C 30 s	84 °C 20 s	45	87 °C	232 bp
<i>IGF-II/ FJ410929</i> TTAAGGAGACGCCATTCAA GCTTGGGTTGAAAATGTTTG	94 °C 30 s	55 °C 30 s	72 °C 30 s	86 °C 20 s	45	92 °C	200 bp
<i>β-actin/ AB039726</i> CTGGTATCGTGATGGACTCT AGCTCATAGCTCTTCTCCAG	94 °C 30 s	56 °C 30 s	72 °C 30 s	87 °C 20 s	35	91 °C	285 bp

Supplementary table 3

Primer sequences for goldfish *leptin-AI*, *leptin-AII*, *proglucagon* and *glucagon receptor* transcripts detection.

Gene Target/Accession No.	F/R	Primer Sequences, 5'-3'	Product size
<i>leptin-AI</i>/ FJ534535	F R	TCCAAAGCTCCTCATAGG TGGTGGGTGGCGTTTTCC	270 bp
<i>leptin-AII</i>/ FJ854572	F R	TATCGTGGACACCCTAACTAC GGTCTAAAGCCAAGAACCCTAA	224 bp
<i>proglucagon</i>/ U65528	F R	GATACACTGATAGATGGCGAAG GATACACTGATAGATGGCGAAG	227 bp
<i>glucagon receptor</i>/ AY584244	F R	GGTCTTCTTCTGCTCCTCTTT CGAACCACCGTTGCTCTT	285 bp
<i>β-actin</i>/ AB039726	F R	CTGGTATCGTGATGGACTCT AGCTCATAGCTCTTCTCCAG	285 bp